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(71) Applicant: KENSINGTON MICROWARE LIMITED
[US/US]; 2855 Campus Drive, San Mateo, CA 94403 (US).(72) Inventor: CARL, Stewart, R.; 533 Addison, Palo Alto, CA
94306 (US).(74) Agents: WOODS, Michael, E. et al.; Townsend and Townsend
and Crew, Steuart Street Tower, 20th floor, One Market
Plaza, San Francisco, CA 94105 (US).

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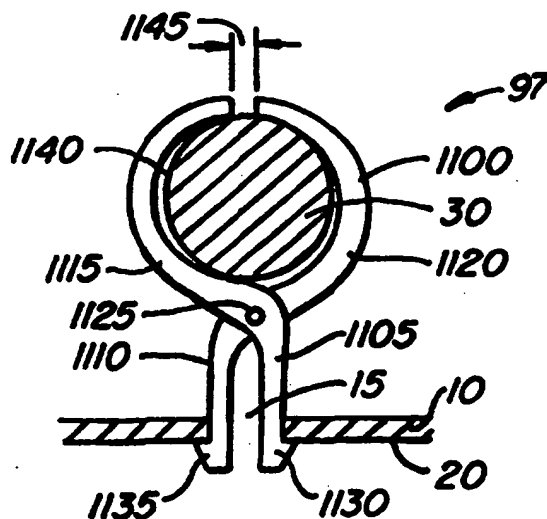
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: SECURITY DEVICE FOR A PORTABLE COMPUTER

(57) Abstract

A locking interface for a specially designed slot on a personal computer housing. The interface includes two legs (1105 and 1110) pivotable about an articulation point (1125). The two legs have opposing flanges (1130 and 1135) on one end and handles (1115 and 1120) on an opposite end. The two legs articulate between two positions. In a first position, the legs and flanges may be inserted into the specially designed slot of the personal computer's housing, then articulated into a second position where the flanges of the legs engage an inner surface of the housing to prevent the locking interface's removal. In a preferred embodiment, the handles form an aperture when the device is in the second position. A retaining member (30) such as a cable or shackle of a lock can be inserted through the aperture preventing the locking interface from assuming the first position.



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SECURITY DEVICE FOR A PORTABLE COMPUTER

BACKGROUND OF THE INVENTION

5 The present invention relates generally to devices for inhibiting the theft of relatively small but expensive pieces of equipment. More specifically, the invention relates to a lock interface for a specially designed slot having predetermined dimensions.

10 Computers have evolved rather rapidly from large, expensive machines usable only by a few, to relatively small, portable machines which are usable by many. In particular, the development of desktop computers with significant processing power has made computers available to the general
15 population. It is now common for college and even high school students to have their own computer, and desktop computers are in wide spread use as word processors and work stations in almost all forms of business. Desktop computers are relatively small and easily transportable, and an undesirable
20 side effect of their proliferation is the fact that the theft of such computers is a significant problem.

 A variety of devices have been developed to inhibit the theft of desktop computers and similar equipment. Since desktop computer systems involve several components, typically
25 including the computer itself, a separate monitor, keyboard and often a printer, such security systems often employ a cable which attaches each of the components to each other and to a relatively immovable object such as a desk. The principal difficulty in such systems is providing an effective
30 and convenient method for attaching the cable itself to the equipment.

 Kensington Microware Limited, assignee of this application, currently provides a security system which is especially designed for use with particular Apple computers.
35 Certain Apple computer components have slots and internal brackets designed to capture a specially designed tab inserted through the slot so that the tab is not removable. While this system is effective for particular types of Apple computers,

it does not work for those Apple computer components and other computer brands which do not have the special designed slots and brackets.

5 It is undesirable to require a computer to have specially designed slots and internal capture brackets because the brackets occupy a significant amount of space in an item of equipment which is intended to be as space efficient as possible. Different items of Apple equipment require different sized slots, meaning that the security mechanism must provide a variety of different sized tabs. The tabs, 10 once inserted, cannot be removed without damage to the equipment, meaning that the security system cannot be moved from one computer to the other. Even Apple computers with specially designed slots are typically used with peripheral equipment which does not have them, and, the Kensington system 15 provides screws requiring a special screwdriver which replace the screws used to attach the existing communication cables, securing the peripheral equipment to the base computer by preventing unauthorized removal of the communication cables. 20 This last aspect of the system has a drawback in that the peripheral equipment cannot be removed from the base computer without the special screwdriver, which can be lost or misplaced.

Other vendors provide security systems which are not 25 required to interface directly with special slots and capture mechanisms as provided in certain Apple computers. For example, Secure-It, Inc., under the trademark "KABLIT", provides a variety of brackets attached to the computer component using existing mounting screws, i.e., screws which 30 are already used to secure items of equipment within the cabinet. Typically, the bracket is apertured so that passage of the cable through the aperture prevents access to the mounting screw and thus prevents removal of the bracket from the equipment. A deficiency of this type of system is that it 35 requires the removal of the existing mounting screw, which may cause some damage to the internal components of the computer. Suitable existing screws are not always available on certain peripherals for convenient attachment of the fastener. For

this latter reason, KABLIT also provides glue-on disks which, unfortunately, are permanently secured to the equipment.

The theft of small but expensive equipment such as desktop or laptop computers is a growing problem. Existing devices are simply too inefficient or ineffective, or their application is too limited. As a result, the use of such security systems is rare, computer equipment is typically left unprotected, and it is all too often stolen.

SUMMARY OF THE INVENTION

The present invention provides a simple yet efficient solution to the prior art problem of inhibiting theft of portable equipment. Specifically, the present invention discloses lock interfaces for a specially designed slot having predetermined dimensions and methods of providing a locking interface to a specially designed slot.

In a preferred embodiment, a locking interface for the specially designed slot includes two legs pivotably coupled together about an articulation point. The two legs each have opposing flanges on a first end and handles on a second end. The two legs define a first and a second position, with the flanges and legs adapted for insertion and removal when in the first position. The flanges engage an inner surface of the wall when the legs are in the second position. The preferred embodiment includes a retainer that is coupled to the handles of the first and second legs that retain the legs in the second position when the flanges engage the inner surface.

In the preferred embodiment, the handles define an aperture and an object extends through the aperture to hold the legs in the second position. The object may be any suitable object, including a cable or shackle of a lock.

In operation, a user operates the first and second legs into the first position, inserts the legs into the slot, operates the handles to move the legs to the second position so that the flanges engage the slot. Thereafter, a retainer is coupled to the handles so as to hold the legs in the second position. The retainer may be a cable extending through an

aperture defined by the handles of the legs, though other similar objects may be used.

Further understanding of the nature and advantages of the invention may be realized by reference to the remaining portions of the Specification and Drawings. In the drawings, similarly numbered items represent the same or functionally equivalent structures.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates a typical use of an embodiment of the present invention;

Fig. 2 illustrates another embodiment of lock interface; and

Fig. 3 is another view of the lock interface in Fig. 2 with the first leg and the second leg in the first position.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

Fig. 1 illustrates a typical use of an embodiment of the present invention. A portable computer 5 has a wall 10 provided with a slot 15. Wall 10 includes an inner surface 20. A lock interface 25 is engageable with wall 10 through slot 15. A locking mechanism 30, according to the preferred embodiment, includes a cable 35 and a lock 40. In operation, a user inserts lock interface 25 into slot 15 and engages lock interface 25 with inner surface 20. Once engaged, a user can attach lock interface 25 to a stationary object with cable 35 and lock 40.

Fig. 2 is a preferred embodiment of lock interface 97. Lock interface 97 includes an engagement member 1100. Engagement member 1100 includes a first leg 1105, a second leg 1110, a first handle 1115, a second handle 1120, and an articulation point 1125. First leg 1105 includes a flange 1130 at a distal end that is flanged away from second leg 1110, and second leg 1110 includes a flange 1135 at a distal end that is flanged away from first leg 1105. First handle 1115 and second handle 1120 are curved towards each other to define an aperture 1140 and are separated by a space 1145.

First leg 1105 and second leg 1110 are coupled to each other at articulation point 1125. When first leg 1105 and second leg 1110 move towards each other, defining a first position, first handle 1115 and second handle 1120 are moved towards each other by the distance of space 1145, and when first handle 1115 and second handle 1120 are moved away from each other, first leg 1105 and second leg 1110 move away from each other, defining a second position. Fig. 3 is another view of the lock interface in Fig. 2 with first leg 1105 and second leg 1110 in the first position. When first leg 1105 and second leg 1110 are in the first position, flange 1130 and flange 1135 are insertable and removable from slot 15. Fig. 2 illustrates that when first leg 1105 and second leg 1110 are in the second position, flange 1130 and flange 1135 are engageable with inner surface 20.

In operation, a user moves first handle 1115 and second handle 1120 towards each other, causing first leg 1105 and second leg 1110 to move into the first position, and inserts flange 1130 and flange 1135 into slot 15. Moving first handle 1115 and second handle 1120 away from each other causes first leg 1105 and second leg 1110 to move into the second position, allowing engagement of flange 1130 and flange 1135 with inner surface 20. Inserting a locking mechanism 30 through aperture 1140 maintains positioning of first handle 1115 and second handle 1120, maintains positioning of first leg 1105 and second leg 1110 in the second position, and can be used to lock the computer 5 to a stationary object.

In the foregoing specification, the invention has been described with reference to a specific exemplary embodiments thereof. It will, however, be evident that various modifications and changes may be made thereunto without departing from the broader spirit and scope of the invention as set forth in the claims.

Many changes or modifications are readily envisioned, for example, changing the shape of the slot and the shape of the head portion, adding catches to the engagement members, and changing the shape of the flanges among other changes. Additionally, where a cable is shown,

some other type of rigid, non-compressible object can be used to maintain the flange in the locked position. The specification and drawings are, accordingly, to be regarded in an illustrative rather than in a restrictive sense.

WHAT IS CLAIMED IS:

1 1. A locking interface for a specially designed
2 slot having preselected dimensions in a wall, the wall having
3 an inner surface, the locking interface comprising:

4 a first leg and a second leg, pivotably coupled
5 about an articulation point, each of said legs having opposing
6 flanges on a first end and opposing handles on a second end,
7 said first leg and said second leg having a second position
8 and a first position, said opposing flanges of said first leg
9 and said second leg adapted for insertion and removal from the
10 slot when in said first position, and said opposing flanges of
11 said first leg and said second leg adapted for engagement with
12 the inner surface when in said second position; and

13 a retainer, coupled to said opposing handle of said
14 first leg and to said opposing handle of said second leg,
15 adapted for retaining said first leg and said second leg in
16 said second position.

1 2. The locking interface of claim 1 wherein said
2 opposing handle define an aperture and wherein said retainer
3 is an object passing through said aperture.

1 3. The locking interface of claim 2 wherein said
2 retainer is a cable passing through said aperture.

1 4. The locking interface of claim 1, wherein said
2 opposing handles of said first leg and said second leg define
3 a first aperture, and wherein said retainer includes a second
4 aperture, said first aperture and said second aperture co-
5 aligned when said retainer retains said first leg and said
6 second leg in said second position.

1 5. A locking interface for a specially designed
2 slot having preselected dimensions in a wall, the wall having
3 an inner surface, the locking interface comprising:

4 a first and a second leg, pivotably coupled about
5 an articulation point, each of said legs having opposing
6 flanges on a first end and opposing handles on a second end,

7 said first leg and said second leg having a second position
8 and a first position, said opposing flanges of said first leg
9 and said second leg adapted for insertion and removal from the
10 slot when in said first position, and said opposing flanges of
11 said first leg and said second leg adapted for engagement with
12 the inner surface when in said second position; and
13 means, coupled to said opposing handle of said first
14 leg and to said opposing handle of said second leg, adapted
15 for retaining said first leg and said second leg in said
16 second position.

1 6. A locking interface for a specially designed
2 slot having preselected dimensions in a wall, the wall having
3 an inner surface, the locking interface comprising:
4 a first and a second leg, pivotably coupled about
5 an articulation point, each of said legs having opposing
6 flanges on a first end and opposing handles on a second end,
7 said first leg and said second leg having a second position
8 and a first position, said opposing flanges of said first leg
9 and said second leg adapted for insertion and removal from the
10 slot when in said first position, and said opposing flanges of
11 said first leg and said second leg adapted for engagement with
12 the inner surface when in said second position, said opposing
13 handles of said first leg and said second leg defining an
14 aperture, said aperture adapted for inhibiting said first leg
15 and said second leg from moving from said second position to
16 said first position only when an object extends through said
17 aperture.

1 7. A method of providing a locking interface to a
2 specially designed slot having preselected dimensions in a
3 wall, the wall having an inner surface, the method comprising
4 the steps of:
5 placing a first and a second leg, pivotably coupled
6 about an articulation point, each of said legs having opposing
7 flanges on a first end and opposing handles on a second end,
8 in a first position, said opposing flanges of said first leg
9 and said second leg adapted for insertion and removal from the

10 slot when in said first position, said opposing flanges of
11 said first leg and said second leg adapted for engagement with
12 the inner surface in an second position;
13 inserting said opposing flanges of said first leg
14 and said second leg in the slot when in said first position;
15 placing said first leg and said second leg in said
16 second position; and
17 retaining said opposing handles of said first leg
18 and said second leg in said second position with a retainer.

1 8. The method of claim 7, further comprising the
2 step of:

3 thereafter aligning a first aperture, formed by said
4 opposing handles of said first leg and said second leg, with a
5 second aperture formed in said retainer;

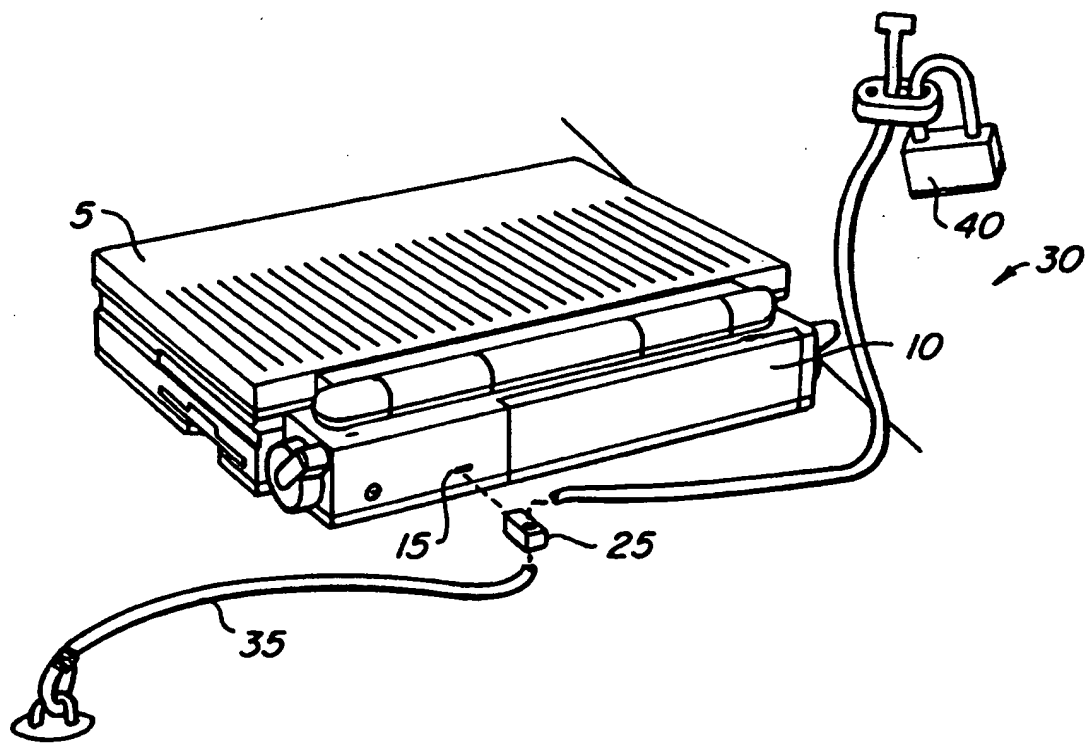
1 9. A method of providing a locking interface to a
2 specially designed slot having preselected dimensions in a
3 wall, the wall having an inner surface, the method comprising
4 the steps of:

5 placing a first and a second leg, pivotably coupled
6 about an articulation point, each of said legs having opposing
7 flanges on a first end and opposing handles on a second end,
8 in a first position, said opposing flanges of said first leg
9 and said second leg adapted for insertion and removal from the
10 slot when in said first position, said opposing flanges of
11 said first leg and said second leg adapted for engagement with
12 the inner surface in a second position;

13 inserting said opposing flanges of said first leg
14 and said second leg in the slot when in said first position;
15 placing said first leg and said second leg in said
16 second position; and

17 retaining said opposing handles of said first leg
18 and said second leg in said second position.

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**FIG. 1.**

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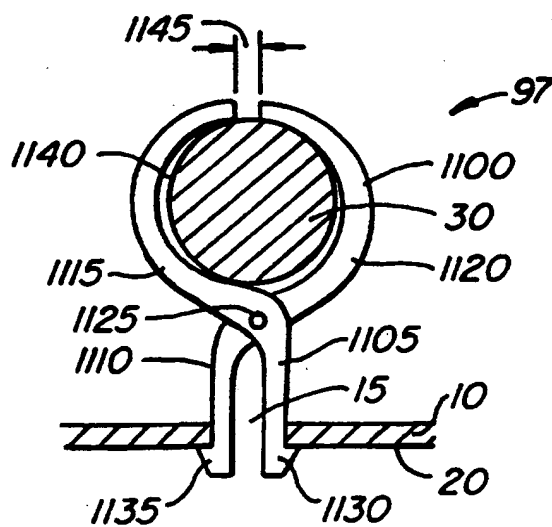


FIG. 2.

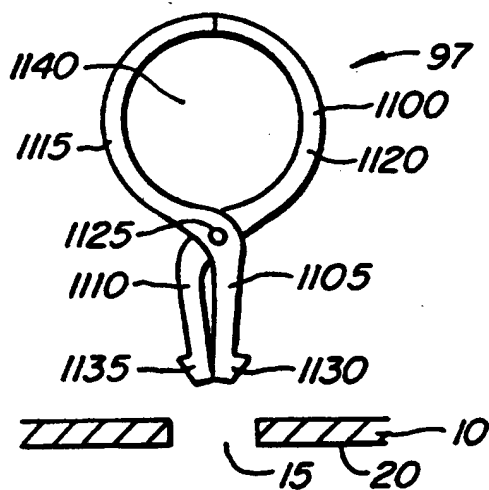


FIG. 3.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/10672

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : E05B 69/00, 73/00

US CL : 70/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 70/58, 14, 18, 423, 424

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A, 505,299 (SCHNEIDER) 19 September 1893	1-9
X	US, A 934,928 (MICHEL) 21 September 1909, Figures 1 and 2	1, 2, 4-9
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Y		3
A	US, A, 942,537 (BATDORF) 07 December 1909	1-9
A	US, A, 4,462,233 (HORETZKE) 31 July 1984	1-9
X	US, A, 4,738,428 (THEMISTOS) 19 April 1988, col. 1, lines 5-9. Col 2, lines 45-60.	1-9
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Y		3
X	FR,A, 455,740 (DRIESEN) 07 April 1913, Figure 11	1,2, 4-9
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Y		3

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Authorized officer

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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	NO,A 14,095 (NIELSEN) 15 May 1905, Figures 1-3	1, 2, 4-9 ----- 3